

**New Tax-efficient, Option-based Compensation Packages
Part III: A Note on the Implementation**

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Abstract. Interpreted as a boundary condition for call options the simple identity

$$P + \max(S - [X + P], 0) = \max(S - X, P)$$

S: share price, e.g., RUKN

X: exercise price

P: "investment protection", $P > 0$

means that the price of a "protected" European call option (right-hand side of the identity) equals the sum of the price of a discount bond and the price of an ordinary European call option with a strike price that is increased by the amount of the "investment protection". Using Swiss Re stock (RUKN) as an example we show here how the above simple identity and a little bit of financial engineering can be used to design *new tax-efficient, option-based compensation packages* with the following properties:

- (a) these instruments (*European compound calls with investment protection*) are the next simplest alternative to the standard American forward-start call type compensation schemes;
- (b) the option strike can be set at psychologically acceptable levels (RUKN is a high-value stock);
- (c) the option premium (i.e., the tax-effective initial investment into the package) can be significantly reduced;
- (d) the overall risk exposure is not increased;
- (e) the initial investment (option premium) is protected if "things go wrong" during the initial time period (3.5 years in the example considered here) in which the compensation package cannot be exercised for tax reasons.

Part III: A Note on the Implementation gives some useful hints on how European compound call option -based compensation packages with investment protection can be implemented.

Keywords. Option-based compensation package, investment protection, European compound call option with investment protection.

Contents.**Part I: Compound Option Structures (separate paper)**

1. Introduction
 - Standard Option-based Compensation Packages
 - Swiss Re Registered Share Model
 - Risk-free Interest Rate
 - Volatility
 - Dividend Yield
 - European Call Option
 - Alternative Maturities
 - Quota-share Options
2. Compound Option Structures
 - Underlying American Forward-start Call Option
 - Time Value of the Underlying
 - European Call Option on the American Forward-start Call

Part II: Investment Protection (separate paper)

3. Hedge Strategies
 - European Put Options
 - American Forward-start Puts
4. Investment Protection
 - Investment Protecting European Put
 - American Call Option with Investment Protection
 - European Call Compound Option with Investment Protection

Part III: A Note on the Implementation

5. Full Protection
 - Fully Protected American Call Option 3
 - European Call Compound Option with Investment Protection 4
6. "Mitarbeiter-Option" Alternatives
 - American Forward-start Call (Standard Structure) 6
 - European Call Compound Option
on American Forward-start Call 7
 - European Call Compound Option with Investment Protection
on American Forward-start Call 9
 - European Call Compound Option with Investment Protection
on Fully Protected American Forward-start Call 11
 - Final Remarks 14
7. Implementation
 - The Internal Market 16
 - Margin Accounts / Leverage 18
 - Final Remarks 22

5. Full Protection

Fully Protected American Call Option. Extending the concept of an American forward-start call type “Mitarbeiter-Option” with investment protection (see *Part II: Investment Protection*) would allow us to create a fully protected “Mitarbeiter-Option”, i.e., a derivative security that would at least pay the initial investment (plus interest at the Swiss risk-free rate) if “things went wrong” during its entire maturity period of 5 years, while at the same time however preserving the leverage (upside potential) of an ordinary American forward-start call option (with 5 years to maturity, starting in 3.5 years time). Such a synthetic asset would protect a potential “Mitarbeiter-Option” holder from any significant loss during the entire investment period of 5 years at a nominal price of:

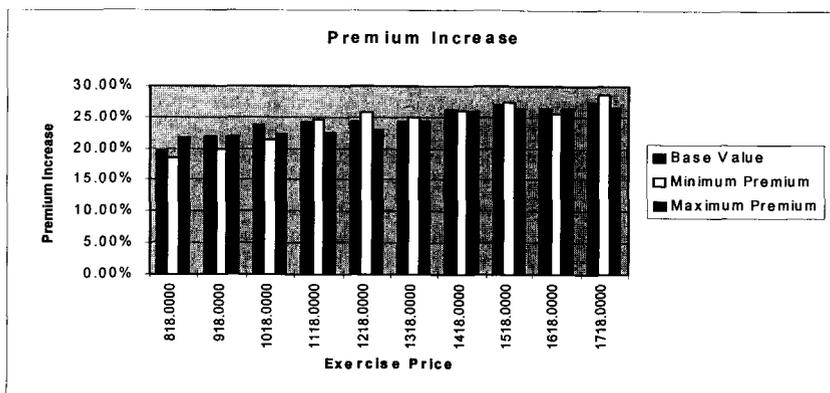
American Call Option		Option Price	
Exercise Price	Base Value	Minimum Premium	Maximum Premium
818.0000	677.9225	600.8864	761.5091
918.0000	609.5428	527.1487	695.9312
1018.0000	545.8303	458.3482	634.7240
1118.0000	486.1530	397.2188	576.8142
1218.0000	429.5262	340.9381	521.4357
1318.0000	380.0146	291.0742	474.3947
1418.0000	335.2214	247.7675	427.9717
1518.0000	294.7187	209.0324	386.6902
1618.0000	256.3263	175.5611	345.4242
1718.0000	225.6533	147.1661	312.8925
	Base Value:	Minimum Premium:	Maximum Premium:
	volatility = 22.5%	volatility = 20%	volatility = 25%
	dividend yield = 2%	dividend yield = 2.4%	dividend yield = 1.6%
	interest rate = 4%	interest rate = 3%	interest rate = 5%

Again, we just use Swiss Re registered stock (RUKN) with a current market value of CHF 1218.00 (as of 18 October 1995) as an example in order to be able to present our ideas in more concrete terms.

The “insurance” premium (or “real” option price, see *Part II: Investment Protection*) for the complete investment protection offered by this hybrid asset structure is however only

American Call Option		Premium	
Exercise Price	Base Value	Minimum Premium	Maximum Premium
818.0000	206.2550	180.1365	235.3550
918.0000	198.4951	170.9249	227.9527
1018.0000	188.6984	158.7690	218.3034
1118.0000	177.1317	146.9477	206.9366
1218.0000	164.2398	133.7211	195.2991
1318.0000	149.9746	118.0111	183.9790
1418.0000	137.8953	104.5232	172.4622
1518.0000	124.5083	91.4343	159.0917
1618.0000	110.4909	77.6665	145.7277
1718.0000	99.7196	67.6718	134.6523
	Base Value:	Minimum Premium:	Maximum Premium:
	volatility = 22.5%	volatility = 20%	volatility = 25%
	dividend yield = 2%	dividend yield = 2.4%	dividend yield = 1.6%
	interest rate = 4%	interest rate = 3%	interest rate = 5%

which means that the above outlined full investment protection scheme costs



more than the partial (over 3.5 years) investment protection mechanism considered in *Part II: Investment Protection*.

European Call Compound Option with Investment Protection. A natural extension of the above thoughts that would allow us to achieve full protection of a potential “Mitarbeiter-Option” holder against losses during the entire investment period of 5 years¹ at a still lower price would be a European call (compound) option with investment protection on the fully protected American forward-start call option created in the preceding paragraph:

European Call (Compound) Option		Option Price	
Strike Underlying	Base Value	Minimum Premium	Maximum Premium
818.0000	198.9579	170.4008	227.2485
918.0000	193.4724	165.0283	222.3551
1018.0000	186.6811	158.1358	216.1156
1118.0000	178.7762	149.6214	208.8405
1218.0000	170.0520	140.0601	201.6235
1318.0000	159.8401	128.8186	193.0867
1418.0000	149.7899	117.5323	184.4150
1518.0000	139.2770	105.9383	174.5951
1618.0000	128.2934	94.0335	165.4387
1718.0000	118.3232	83.9018	156.0199
	Base Value:	Minimum Premium:	Maximum Premium:
	volatility = 22.5%	volatility = 20%	volatility = 25%
	dividend yield = 2%	dividend yield = 2.4%	dividend yield = 1.6%
	interest rate = 4%	interest rate = 3%	interest rate = 5%

The “insurance” premium (or “real” option price) for the complete investment protection offered on such a compound option basis is then only

¹ A 5 year maturity American call option starting 3.5 years from now is characterized by the boundary conditions

$$L(t,S) = \max(S - X, 0), \quad 3.5 \leq t \leq 5$$

$$F(S) = \max(S - X, 0).$$

A corresponding fully protected (by an amount $P > 0$) call then has the similar characterization

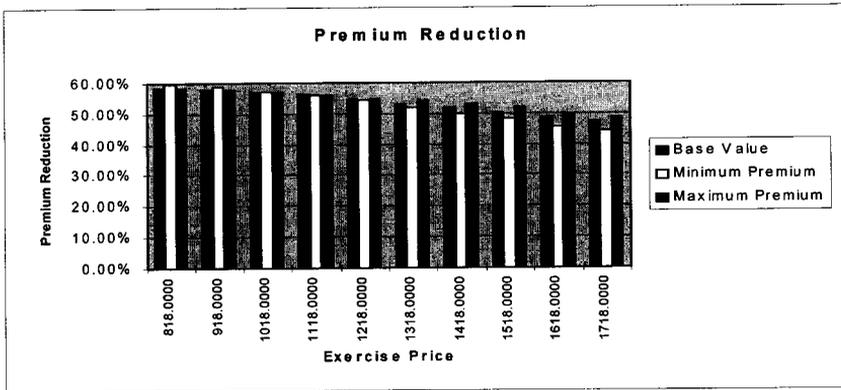
$$L(t,S) = \max(S - X, 0), \quad 3.5 \leq t \leq 5$$

$$F(S) = \max(S - X, P).$$

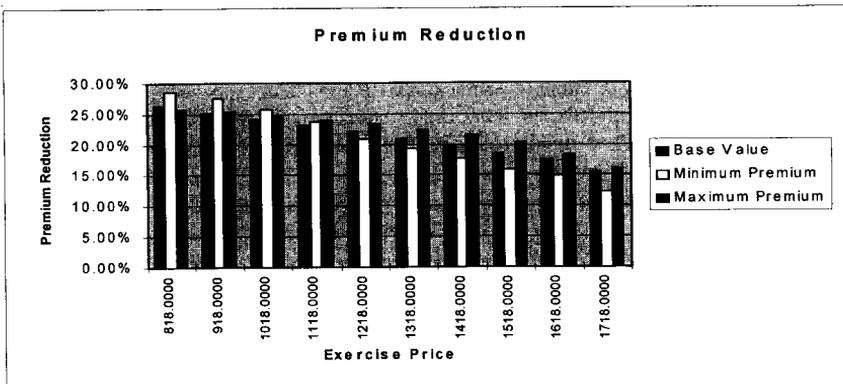
For more details, see *Part I: Compound Option Structures* and *Part II: Investment Protection*.

European Call (Compound) Option			Premium		
Strike Underlying	Base Value		Minimum Premium	Maximum Premium	
818.0000		85.4142	72.6307	98.0503	
918.0000		83.2793	70.6104	96.1731	
1018.0000		80.6531	68.0420	93.8049	
1118.0000		77.6130	64.7359	91.0582	
1218.0000		74.2713	61.0209	87.9580	
1318.0000		70.3078	56.6693	84.2339	
1418.0000		66.2355	52.1311	80.4508	
1518.0000		61.5868	47.4151	76.2991	
1618.0000		56.7300	42.2715	72.8051	
1718.0000		52.4704	37.7169	69.0393	
	Base Value:		Minimum Premium:		Maximum Premium:
	volatility = 22.5%		volatility = 20%		volatility = 25%
	dividend yield = 2%		dividend yield = 2.4%		dividend yield = 1.6%
	interest rate = 4%		interest rate = 3%		interest rate = 5%

which means that this (compound) full investment protection scheme costs



less than the full investment protection mechanism built into the underlying American forward-start call option and



less than the same compound “Mitarbeiter-Option” structure on the only partially protected underlying American forward-start call option considered in *Part II: Investment Protection* because, of course, the expected value of the underlying in period 42 (3.5 years) increases.

6. “Mitarbeiter-Option” Alternatives

In order to also show the influence of a (short-term) price move in the underlying Swiss Re registered share (RUKN, that is merely used as an example here in order to be able to present our ideas in more concrete terms) we now assume a current RUKN price of CHF 1253.00 (as of 1 February 1996) and re-evaluate the most promising “Mitarbeiter-Option” alternatives very briefly from an investor’s (employee’s) perspective.

American Forward-start Call (Standard Structure).

Underlying: RUKN (1 February closing price: CHF 1253.00)
Maturity: 1.5 years, starting in 3.5 years.
Exercise Price: CHF 1253.00
Exercise: After a waiting period of 3.5 years anytime during the maturity period of 1.5 years.

Option Price: CHF 249.00²

Example: Exercise in 4 Years					
RUKN Price Upon Exercise (CHF)	Net Gain/Loss (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)	
1253.00	-249.00	-25%	0%		
1402.00	-100.00	-10%	3%		
1502.00	0.00	0%	5%		
1602.00	100.00	10%	7%	7.3	
1702.00	200.00	20%	9%	11.3	
1802.00	300.00	30%	11%	13.8	
1902.00	400.00	40%	13%	15.6	

Remarks:

- (1) In the case where during the entire maturity period the market price of RUKN never reaches the *break-even level of CHF 1502.00*, as in any call option compensation package, at least part of the option premium of CHF 249.00 is lost.
- (2) The option returns are based on an *initial investment of CHF 249.00* while the RUKN returns of course require an initial investment of CHF 1253.00.
- (3) The RUKN return column introduced above is used to determine the degree of leverage achievable with an option-based compensation package: (a) on a *per-instrument-basis* the leverage figures (where

$$\text{leverage} = \frac{\text{return option}}{\text{return RUKN}}$$

for positive option and RUKN returns) are *1.4, 2.2, 2.7* and *3.1*, respectively; and (b) on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to 1253 : 249 = 5 options) the leverage figures are *7.3, 11.3, 13.8* and *15.6*, respectively.

² Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

European Call Compound Option on American Forward-start Call.

Underlying: American Forward-Start Call Option (AFSC) with:
 Underlying: RUKN (1 February 1996 closing price: CHF 1253.00)
 Maturity: 1.5 years, starting in 3.5 years.
 Exercise Price: CHF 1153.00
 Exercise: After a waiting period of 3.5 years anytime during the maturity period of 1.5 years.

Maturity: 3.5 years
Exercise Price: CHF 239.00³
Exercise: At maturity, in 3.5 years.

Option Price: CHF 166.00⁴

Example: Exercise of European (Compound) Call in 3.5 Years					
RUKN Price Upon Exercise (CHF)	AFSC Price Upon Exercise (CHF)	Net Gain/Loss (CHF)	Return Option (% p.a)	Return RUKN (% p.a)	Leverage (Inv. Equiv. Basis)
1361.00	239.00	-166.00	-29%	2%	
1418.00	305.00	-100.00	-17%	4%	
1505.00	405.00	0.00	0%	8%	
1592.00	505.00	100.00	17%	8%	16.8
1679.00	605.00	200.00	34%	10%	26.7
1766.00	705.00	300.00	52%	12%	33.3
1853.00	805.00	400.00	69%	14%	38.0

Remarks:

- (1) In the case where at maturity of the European call (compound) option the market price of AFSC does not reach the **break-even level of CHF 405.00** (or equivalently, RUKN does not reach the level of CHF 1505.00), at least part of the option premium of CHF 166.00 is lost.
- (2) The option returns are based on an **initial investment of CHF 166.00** while the RUKN returns of course require an initial investment of CHF 1253.00.
- (3) The RUKN return column introduced above is used to determine the degree of leverage achievable with an option-based compensation package: (a) on a **per-instrument-basis** the leverage figures (where

$$\text{leverage} = \frac{\text{return option}}{\text{return RUKN}}$$

for positive option and RUKN returns) are **2.2, 3.5, 4.4** and **5.0**, respectively; and (b) on an **investment-equivalent-basis** (note that 1 RUKN is equivalent to 1253 : 166 = 8 options) the leverage figures are **16.8, 26.7, 33.3** and **38.0**, respectively.

- (4) Upon exercise of the European (compound) call in 3.5 years time (i.e., if at that time the market price of AFSC is above the compound call's exercise price of CHF 239.00, or equivalently, RUKN is above the level of CHF 1361.00) the option holder can decide to buy the underlying American forward-start call option (AFSC) at the **exercise price of CHF 239.00⁵**, in which case he/she can thereafter exercise this option anytime during its maturity

³ The expected value of the underlying American forward-start call option (AFSC) in 3.5 years is CHF 339.00 and the associated time value is 13% or CHF 43.00 (these values at expectation should not be confused with the corresponding values in the average growth scenario considered below).

⁴ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

⁵ This brings the **nominal total investment to CHF 405.00** (= CHF 166.00 for the European call (compound) option at the beginning + CHF 239.00 for the underlying American forward-start call option after 3.5 years). Of

period of 1.5 years. We consider below two such exercise scenarios for the underlying American forward-start call after 0.5 years (i.e., in 4 years time):

Example 1 (Worst Case Scenario): Exercise of the Underlying AFSC in 4 Years, 3.5 Year AFSC = CHF 240.00				
RUKN Price Upon Exercise (CHF)	Net Gain/Loss (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)
1153.00	-404.00	-25%	-2%	
1457.00	-100.00	-6%	4%	
1557.00	0.00	0%	6%	
1657.00	100.00	6%	8%	2.4
1757.00	200.00	12%	10%	3.8
1857.00	300.00	19%	12%	4.8
1957.00	400.00	25%	14%	5.5

Remarks:

- (1) In the case where during the entire maturity period of the American forward-start call option the market price of RUKN never reaches the **break-even level of CHF 1557.00**, at least part of the option premium of CHF 404.00 is lost.
- (2) The option returns are based on an **initial investment of CHF 404.00 (i.e., CHF 238.00 of additional cash is required after 3.5 years)** while the RUKN returns of course require an initial investment of CHF 1253.00.
- (3) On a **per-instrument-basis** the leverage figures are **0.8, 1.2, 1.5** and **1.8**, respectively; and on an **investment-equivalent-basis** (note that 1 RUKN is equivalent to 1253 : 404 = 3 options) the leverage figures are **2.4, 3.8, 4.8** and **5.5**, respectively.

Example 2 (Average Growth Scenario): Exercise of the Underlying AFSC in 4 Years, 3.5 Year AFSC = CHF 718.00				
RUKN Price Upon Exercise (CHF)	Net Gain (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)
1569.00	490.00	74%	6%	88.3
1669.00	590.00	89%	8%	80.8
1769.00	690.00	104%	10%	76.2
1869.00	790.00	119%	12%	73.1
1969.00	890.00	134%	14%	70.8
2069.00	990.00	149%	16%	69.1
2169.00	1090.00	164%	18%	67.8

Remarks:

- (1) The average growth scenario is based on an 10% p.a. average growth rate of the market value of RUKN which means that this market value in 3.5 years would be CHF 1778.00 and in 4 years CHF 1869.00.
- (2) The option returns are based on an **initial investment of CHF 166.00 (i.e., no additional cash is required after 3.5 years)** while the RUKN returns of course require an initial investment of CHF 1253.00. Note that additional cash is required after 3.5 years in order to buy the underlying American forward-start call option (AFSC) only if upon exercise

course, **the additional cash required in practice in 3.5 years ranges from CHF 239.00 to CHF 0.00 depending on the actual settlement at maturity** since only in-the-money European (compound) calls are exercised at all and margin accounts and cash settlement are common market practice which a Swiss Re internal "Mitarbeiter-Option" market could follow. Note that stock options cannot usually be purchased on margin in existing options markets because this would increase the associated leverage to levels which are perceived by regulators as unacceptable.

of the European call (compound) option AFSC \leq CHF 478.00 (or equivalently, RUKN \leq CHF 1569.00) holds.

(3) On a *per-instrument-basis* the leverage figures are **11.7, 10.7, 10.1, 9.7, 9.4, 9.2 and 9.0**, respectively; and on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to 1253 : 166 = 8 options) the leverage figures are **88.3, 80.8, 76.2, 73.1, 70.8, 69.1, and 67.8**, respectively.

European Call Compound Option with Investment Protection on American Forward-start Call.

Underlying: American Forward-Start Call Option (AFSC) with:
 Underlying: RUKN (1 February 1996 closing price: CHF 1253.00)
 Maturity: 1.5 years, starting in 3.5 years.
 Exercise Price: CHF 1153.00
 Exercise: After a waiting period of 3.5 years anytime during the maturity period of 1.5 years.

Maturity: 3.5 years

Exercise Price: CHF 239.00⁶

Exercise: At maturity, in 3.5 years.

Protection: CHF 191.00⁷ at maturity if AFSC price upon exercise \leq CHF 430.00⁸.

Net Option Price: CHF 166.00⁹

"Insurance" Premium for

Investment Protection: CHF 106.00

Gross Option Price: CHF 272.00¹⁰

Example: Exercise of Protected European (Compound) Call in 3.5 Years						
RUKN Price Upon Exercise (CHF)	AFSC Price Upon Exercise (CHF)	Net Gain/Loss (CHF)	Return Option (% p.a)	Return RUKN (% p.a)	Leverage (Inv. Equiv. Basis)	
1361.00	239.00	-81.00	-9%	2%		
1511.00	411.00	-81.00	-9%	6%		
1554.00	461.00	-50.00	-5%	7%		
1598.00	511.00	0.00	0%	8%		
1685.00	611.00	100.00	11%	10%		4.9
1772.00	711.00	200.00	21%	12%		8.2
1859.00	811.00	300.00	32%	14%		10.5
1946.00	911.00	400.00	42%	16%		12.2

Remarks:

(1) In the case where at maturity of the European call (compound) option with investment protection the market price of AFSC does not reach the *break-even level of CHF 511.00* (or

⁶ The expected value of the underlying American forward-start call option (AFSC) in 3.5 years is CHF 339.00 and the associated time value is 13% or CHF 43.00 (these values at expectation should not be confused with the corresponding values in the average growth scenario considered below).

⁷ The investment protection of CHF 191.00 payable at maturity of the European call (compound) option equals the net option price of CHF 166.00 plus interest at 4% p.a. over 3.5 years.

⁸ The threshold of CHF 430.00 for the price of the underlying American forward-start call option (AFSC) equals the European (compound) call's exercise price of CHF 239.00 plus the investment protection of CHF 191.00 payable upon exercise of this European call (compound) option at maturity.

⁹ The net option price of CHF 166.00 equals the price of an unprotected European call (compound) option on the underlying American forward-start call option (AFSC).

¹⁰ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

equivalently, RUKN does not reach the level of CHF 1598.00), at least part of the “real” option premium of CHF 81.00 (not the “nominal” option premium of CHF 272.00) is lost.

(2) The option returns are based on an *initial investment of CHF 272.00* while the RUKN returns of course require an initial investment of CHF 1253.00. Note that since the built-in investment protection mechanism in all circumstances pays back at least CHF 191.00 the *“real” option premium is only CHF 81.00 or 30% of the “nominal” option premium of CHF 272.00.*

(3) The RUKN return column introduced above is used to determine the degree of leverage achievable with an option-based compensation package: (a) on a *per-instrument-basis* the leverage figures (where

$$\text{leverage} = \frac{\text{return option}}{\text{return RUKN}}$$

for positive option and RUKN returns) are *1.1, 1.8, 2.3* and *2.7*, respectively; and (b) on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to $1253 : 272 = 5$ options) the leverage figures are *4.9, 8.2, 10.5* and *12.2*, respectively.

(4) Upon exercise of the protected European (compound) call in 3.5 years time (i.e., if at that time the market price of AFSC is above the compound call’s exercise price of CHF 239.00, or equivalently, RUKN is above the level of CHF 1361.00) the option holder can decide to buy the underlying American forward-start call option (AFSC) at the *exercise price of CHF 239.00*¹¹, in which case he/she can thereafter exercise this option anytime during its maturity period of 1.5 years. We consider below two such exercise scenarios for the underlying American forward-start call after 0.5 years (i.e., in 4 years time):

Example 1 (Worst Case Scenario): Exercise of the Underlying AFSC in 4 Years, 3.5 Year AFSC = CHF 240.00				
RUKN Price Upon Exercise (CHF)	Net Gain/Loss (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)
1153.00	-320.00	-25%	-2%	
1373.00	-100.00	-8%	2%	
1473.00	0.00	0%	4%	
1573.00	100.00	8%	6%	4.8
1673.00	200.00	16%	8%	7.3
1773.00	300.00	23%	10%	8.8
1873.00	400.00	31%	12%	9.9

Remarks:

(1) In the case where during the entire maturity period of the American forward-start call option the market price of RUKN never reaches the *break-even level of CHF 1473.00*, at least part of the option premium of CHF 320.00 is lost.

(2) The option returns are based on an *initial investment of CHF 320.00 (i.e., CHF 48.00 of additional cash is required after 3.5 years)* while the RUKN returns of course require an initial investment of CHF 1253.00.

¹¹ This brings the *nominal total investment to CHF 511.00* (= CHF 272.00 for the European call (compound) option with investment protection at the beginning + CHF 239.00 for the underlying American forward-start call option after 3.5 years). Of course, *the additional cash required in practice in 3.5 years ranges from CHF 48.00 (the built-in investment protection mechanism in all circumstances pays back at least CHF 191.00) to CHF 0.00 depending on the actual settlement at maturity* since only in-the-money protected European (compound) calls are exercised at all and margin accounts and cash settlement are common market practice which a Swiss Re internal “Mitarbeiter-Option” market could follow. Note that stock options cannot usually be purchased on margin in existing options markets because this would increase the associated leverage to levels which are perceived by regulators as unacceptable.

(3) On a *per-instrument-basis* the leverage figures are **1.2, 1.9, 2.3** and **2.5**, respectively; and on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to $1253 : 320 = 4$ options) the leverage figures are **4.8, 7.3, 8.8** and **9.9**, respectively.

Example 2 (Average Growth Scenario): Exercise of the Underlying AFSC in 4 Years, 3.5 Year AFSC = CHF 718.00				
RUKN Price Upon Exercise (CHF)	Net Gain (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)
1569.00	384.00	35%	6%	25.8
1669.00	484.00	44%	8%	24.7
1769.00	584.00	54%	10%	24.0
1869.00	684.00	63%	12%	23.6
1969.00	784.00	72%	14%	23.2
2069.00	884.00	81%	16%	23.0
2169.00	984.00	90%	18%	22.8

Remarks:

(1) The average growth scenario is based on an 10% p.a. average growth rate of the market value of RUKN which means that this market value in 3.5 years would be CHF 1778.00 and in 4 years CHF 1869.00.

(2) The option returns are based on an *initial investment of CHF 272.00 (i.e., no additional cash is required after 3.5 years)* while the RUKN returns of course require an initial investment of CHF 1253.00. Note that additional cash is required after 3.5 years in order to buy the underlying American forward-start call option (AFSC) only if upon exercise of the European call (compound) option with investment protection $AFSC \leq CHF 478.00$ (or equivalently, $RUKN \leq CHF 1569.00$) holds.

(3) On a *per-instrument-basis* the leverage figures are **5.6, 5.4, 5.2, 5.1, 5.0, 5.0** and **4.9**, respectively; and on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to $1253 : 272 = 5$ options) the leverage figures are **25.8, 24.7, 24.0, 23.6, 23.2, 23.0**, and **22.8**, respectively.

European Call Compound Option with Investment Protection on Fully Protected American Forward-start Call.

Underlying: Fully Protected American Call Option (ACFP) with:
 Underlying: RUKN (1 February 1996 closing price: CHF 1253.00)
 Maturity: 1.5 years, starting in 3.5 years.
 Exercise Price: CHF 1153.00
 Exercise: After a waiting period of 3.5 years anytime during the maturity period of 1.5 years.
 Protection: CHF 360.00¹² at maturity (in 5 years) if RUKN price upon exercise $\leq CHF 1513.00$ ¹³.

Maturity: 3.5 years
Exercise Price: CHF 427.00¹⁴

¹² The investment protection of CHF 360.00 payable at maturity of the fully protected American forward-start call option (ACFP) equals the net option price of CHF 294.00 plus interest at 4% p.a. over 5 years.

¹³ The threshold of CHF 1513.00 for the price of the underlying RUKN equals the fully protected American forward-start call's exercise price of CHF 1153.00 plus the investment protection of CHF 360.00 payable upon exercise of this option at maturity (i.e., in 5 years).

Exercise: At maturity, in 3.5 years.
Protection: CHF 140.00¹⁵ at maturity if ACFP price upon exercise
 \leq CHF 567.00¹⁶.

Net Option Price: CHF 121.00¹⁷
"Insurance" Premium for
Investment Protection: CHF 82.00
Gross Option Price: CHF 203.00¹⁸

Example: Exercise of Protected European (Compound) Call in 3.5 Years					
RUKN Price Upon Exercise (CHF)	ACFP Price Upon Exercise (CHF)	Net Gain/Loss (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)
1392.00	427.00	-63.00	-9%	3%	
1450.00	530.00	-63.00	-9%	4%	
1478.00	580.00	-50.00	-7%	5%	
1506.00	630.00	0.00	0%	6%	
1562.00	730.00	100.00	14%	7%	12.3
1618.00	830.00	200.00	28%	8%	20.9
1674.00	930.00	300.00	42%	10%	27.1
1730.00	1030.00	400.00	56%	11%	31.9
1786.00	1130.00	500.00	70%	12%	35.7
1842.00	1230.00	600.00	84%	13%	38.8
1898.00	1330.00	700.00	99%	15%	41.3

Remarks:

- (1) In the case where at maturity of the European call (compound) option with investment protection the market price of ACFP does not reach the *break-even level of CHF 630.00* (or equivalently, RUKN does not reach the level of CHF 1506.00), at least part of the "real" option premium of CHF 63.00 (not the "nominal" option premium of CHF 203.00) is lost.
- (2) The option returns are based on an *initial investment of CHF 203.00* while the RUKN returns of course require an initial investment of CHF 1253.00. Note that since the built-in investment protection mechanism in all circumstances pays back at least CHF 140.00 the "*real*" option premium is only CHF 63.00 or 31% of the "nominal" option premium of CHF 203.00.
- (3) The RUKN return column introduced above is used to determine the degree of leverage achievable with an option-based compensation package: (a) on a *per-instrument-basis* the leverage figures (where

$$\text{leverage} = \frac{\text{return option}}{\text{return RUKN}}$$

for positive option and RUKN returns) are 2.0, 3.4, 4.4, 5.2, 5.8, 6.3 and 6.7, respectively; and (b) on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to 1253 : 203 = 6 options) the leverage figures are 12.3, 20.9, 27.1, 31.9, 35.7, 38.8 and 41.3, respectively.

¹⁴ The expected value of the underlying fully protected American forward-start call option (ACFP) in 3.5 years is CHF 527.00 and the associated time value is 44% or CHF 230.00 (these values at expectation should not be confused with the corresponding values in the average growth scenario considered below).

¹⁵ The investment protection of CHF 140.00 payable at maturity of the European call (compound) option with investment protection equals the net option price of CHF 121.00 plus interest at 4% p.a. over 3.5 years.

¹⁶ The threshold of CHF 567.00 for the price of the underlying fully protected American forward-start call option (ACFP) equals the protected European (compound) call's exercise price of CHF 427.00 plus the investment protection of CHF 140.00 payable upon exercise of this European call (compound) option with investment protection at maturity.

¹⁷ The net option price of CHF 121.00 equals the price of an unprotected European call (compound) option on the underlying fully protected American forward-start call option (ACFP).

¹⁸ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

(4) Upon exercise of the protected European (compound) call in 3.5 years time (i.e., if at that time the market price of ACFP is above the compound call's exercise price of CHF 427.00, or equivalently, RUKN is above the level of CHF 1392.00) the option holder can decide to buy the underlying fully protected American forward-start call option (ACFP) at the **exercise price of CHF 427.00**¹⁹, in which case he/she can thereafter exercise this option anytime during its maturity period of 1.5 years. We consider below two such exercise scenarios for the underlying fully protected American forward-start call after 1.5 years (i.e., in 5 years time):

Example 1 (Worst Case Scenario): Exercise of the Underlying ACFP in 5 Years, 3.5 Year ACFP = CHF 428.00				
RUKN Price Upon	Net Gain/Loss	Return Option	Return RUKN	Leverage
Exercise (CHF)	(CHF)	(% p a)	(% p a)	(Inv. Equiv. Basis)
1153.00	-130.00	-13%	-2%	
1543.00	-100.00	-10%	5%	
1643.00	0.00	0%	6%	
1743.00	100.00	10%	8%	7.8
1843.00	200.00	20%	9%	12.9
1943.00	300.00	30%	11%	16.6
2043.00	400.00	39%	13%	19.3

Remarks:

(1) In the case where during the entire maturity period of the fully protected American forward-start call option the market price of RUKN never reaches the **break-even level of CHF 1643.00**, at least part of the “real” option premium of CHF 130.00 (not the “nominal” option premium of CHF 203.00) is lost.

(2) The option returns are based on an **initial investment of CHF 203.00 (i.e., no additional cash is required after 3.5 years or ACFP “is bought on margin”)** while the RUKN returns of course require an initial investment of CHF 1253.00. Note that since the built-in investment protection mechanism of ACFP in all circumstances pays back at least CHF 360.00 the **“real” option premium is only CHF 130.00 or 64% of the “nominal” option premium of CHF 203.00.**

(3) On a **per-instrument-basis** the leverage figures are **1.3, 2.1, 2.7 and 3.1**, respectively; and on an **investment-equivalent-basis** (note that 1 RUKN is equivalent to 1253 : 203 = 6 options) the leverage figures are **7.8, 12.9, 16.6 and 19.3**, respectively.

¹⁹ This brings the **nominal total investment to CHF 630.00** (= CHF 203.00 for the European call (compound) option with investment protection at the beginning + CHF 427.00 for the underlying fully protected American forward-start call option after 3.5 years). Of course, **the additional cash required in practice in 3.5 years ranges from CHF 287.00 (the built-in investment protection mechanism of the European (compound) call in all circumstances pays back at least CHF 140.00) to CHF 0.00 depending on the actual settlement at maturity** since only in-the-money protected European (compound) calls are exercised at all and margin accounts and cash settlement are common market practice which a Swiss Re internal “Mitarbeiter-Option” market could follow. Note that stock options cannot usually be purchased on margin in existing options markets because this would increase the associated leverage to levels which are perceived by regulators as unacceptable. Since however **the built-in investment protection mechanism of the American forward-start call in all circumstances pays back at least CHF 360.00 at maturity** Swiss Re could (after presenting the case to the regulatory authorities) decide **not to actually require this additional investment of CHF 287.00 in 3.5 years and to settle any such compensation package upon exercise (early exercise would of course only be possible if RUKN ≥ CHF 1513.00) of the underlying fully protected American forward-start call option (ACFP).**

Example 2 (Average Growth Scenario): Exercise of the Underlying ACFP in 5 Years, 3.5 Year ACFP = CHF 1116.00				
RUKN Price Upon Exercise (CHF)	Net Gain (CHF)	Return Option (% p a)	Return RUKN (% p a)	Leverage (Inv. Equiv. Basis)
1765.00	671.00	66%	8%	49.9
1865.00	771.00	76%	10%	48.0
1965.00	871.00	86%	11%	46.6
2065.00	971.00	96%	13%	45.6
2165.00	1071.00	106%	15%	44.7
2265.00	1171.00	115%	16%	44.1
2365.00	1271.00	125%	18%	43.5

Remarks:

- (1) The average growth scenario is based on an 10% p.a. average growth rate of the market value of RUKN which means that this market value in 3.5 years would be CHF 1778.00 and in 5 years CHF 2065.00.
- (2) The option returns are based on an *initial investment of CHF 203.00 (i.e., no additional cash is required after 3.5 years)* while the RUKN returns of course require an initial investment of CHF 1253.00. Note that ACFP is only “bought on margin” if upon exercise of the European call (compound) option with investment protection $ACFP \leq CHF 854.00$ (or equivalently, $RUKN \leq CHF 1631.00$) holds.
- (3) On a *per-instrument-basis* the leverage figures are *8.1, 7.8, 7.6, 7.4, 7.2, 7.1* and *7.1*, respectively; and on an *investment-equivalent-basis* (note that 1 RUKN is equivalent to 1253 : 203 = 6 options) the leverage figures are *49.9, 48.0, 46.6, 45.6, 44.7, 44.1, and 43.5*, respectively.

Note that the above short-term RUKN price move has no influence on the very favourable risk characteristics of the European compound call type “Mitarbeiter-Option” alternatives, where the option delta, gamma and theta (first and second order sensitivities or risk characteristics) are stochastic quantities: conditionally expected rates of change of the option value with respect to a change in the price of RUKN and time, e.g.,

$$\delta(t,S) = E_{tS} \left[\frac{\Delta v(t,S)}{\Delta S(t)} \right].$$

For more details, see *Part I: Compound Option Structures* and *Part II: Investment Protection*.

Final Remarks. The boundary condition $F(S) = \max(S - X, P)$ of a protected European (compound) call option type “Mitarbeiter-Option” or option-based compensation package can be written in the form

$$\max(S - X, P) = P + \max(S - [X + P], 0)$$

S: share price, e.g., RUKN

X: exercise price

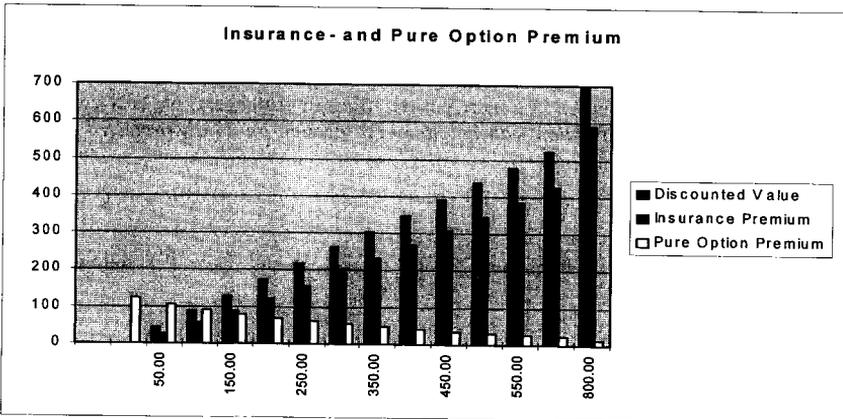
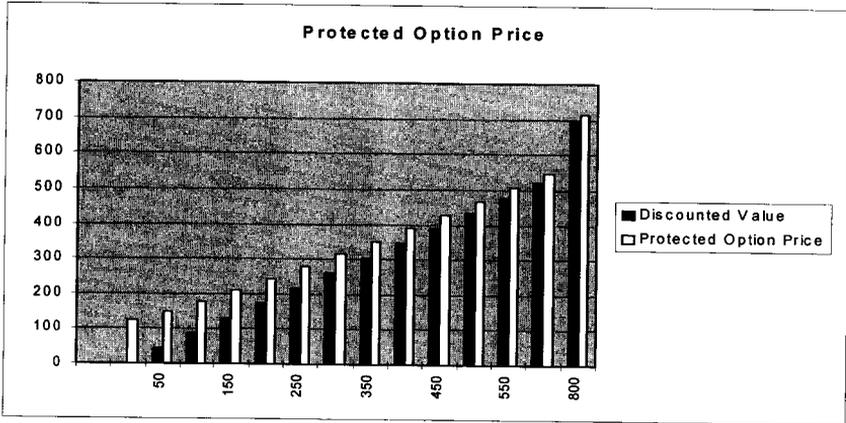
P: investment protection, $P > 0$.

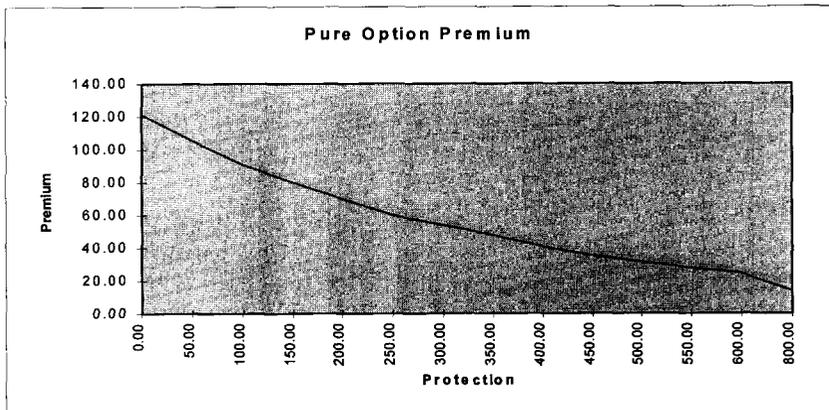
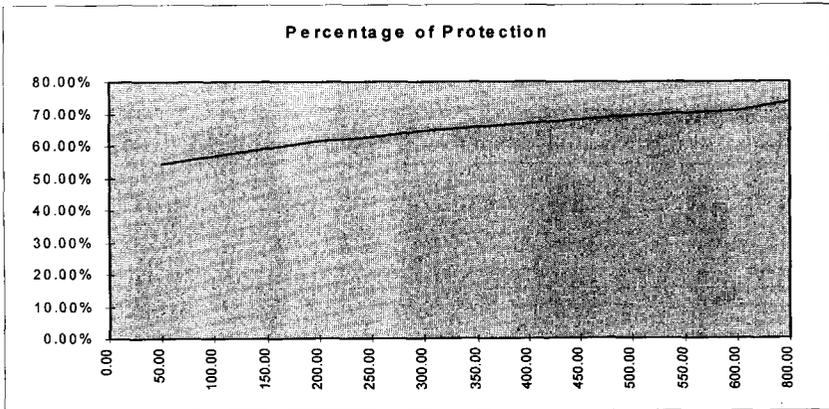
This means that such a “Mitarbeiter-Option” has two components:

- (1) a pure discount bond;
- (2) an ordinary European (compound) call option with a strike price that is increased by the amount of the investment protection.

The following analysis (based on the European compound call option with investment protection on a fully protected American forward-start call) gives some insight into this phenomenon:

European Call (Compound) Option					
Protection	Discounted Value	Protected Option Price	Insurance Premium	Percentage of Protection	Pure Option Premium
0.00	0.00	121.42	0.00		121.42
50.00	43.59	148.64	27.22	54.44%	105.05
100.00	87.17	178.13	56.71	56.71%	90.96
150.00	130.76	210.40	88.98	59.32%	79.64
200.00	174.35	244.30	122.88	61.44%	69.95
250.00	217.93	278.19	156.77	62.71%	60.26
300.00	261.52	315.04	193.62	64.54%	53.52
350.00	305.11	352.42	231.00	66.00%	47.31
400.00	348.69	389.81	268.39	67.10%	41.12
450.00	392.28	427.65	306.23	68.05%	35.37
500.00	435.87	467.55	346.13	69.23%	31.68
550.00	479.45	507.46	386.04	70.19%	28.01
600.00	523.04	547.36	425.94	70.99%	24.32
800.00	697.39	711.38	589.96	73.75%	13.99





7. Implementation

An actual implementation of an options-based (employee) compensation scheme could be based upon the following considerations. Again, Swiss Re is just used as an example in order to be able to present our ideas in a more concrete form. Furthermore, we only consider the *European compound call option with investment protection on a fully protected American forward-start call*.

The Internal Market.

The Swiss Re internal "Mitarbeiter-Option" market should have the following main characteristics:

- **OTC (Over-The-Counter) Type Fully Electronic Market Place**

The "Mitarbeiter-Option" and its components, ACFP and RUKN, would exist in electronic form only. Fully automated electronic position management and internal trade execution

on the basis of state-of-the-art personal banking systems (that could either be internally implemented or outsourced) would be made available to market participants. Market participants would be Swiss Re and its employees. RUKN stock certificates would only be physically delivered if an employee left Swiss Re, upon which time his/her “Mitarbeiter-Option” compensation package would be settled in cash and RUKN stock certificates. The Swiss Re internal “Mitarbeiter-Option” market would fully comply with the relevant banking regulations for stock option markets accessible to private investors and have the approval of the banking supervision authorities.

- ***No Transaction Costs and No Bid-Ask Spread***

- ***Fully Transparent Derivatives Pricing and Risk Exposure Analysis on a Continuous Basis***

The pricing mechanism of the Swiss Re internal “Mitarbeiter-Option” market would be fully transparent to all market participants. This means that pricing and risk exposure analysis of the “Mitarbeiter-Option” and its underlying, ACFP, would (on a continuous basis) take place within the framework of a state-of-the-art financial (stock market) model using best possible estimates for the corresponding market parameters. Both, financial model and market parameters, would be approved by the banking supervision authorities and then be made available and explained in detail to all “Mitarbeiter-Option” market participants. A fully automated electronic derivatives pricing and risk exposure analysis system that would meet the above requirements could again either be internally implemented or outsourced.

- ***Marking-To-Market (Cash Settlement)***

“Mitarbeiter-Option” accounts would be marked-to-market every day on the basis of the closing price of RUKN with final cash settlement upon exercise. RUKN, ACFP and the “Mitarbeiter-Option” itself could (after approval by the banking supervision authorities) be bought on margin according to the following rules:

RUKN:	50% of purchase price, with 25% maintenance margin
ACFP:	worst case exposure (= purchase price - investment protection)
“Mitarbeiter-Option”:	worst case exposure (= purchase price - investment protection)

Note that no maintenance margin for ACFP and the “Mitarbeiter-Option” itself is necessary since the corresponding initial margin is on a full worst case exposure basis. At any time, excess cash in the “Mitarbeiter-Option” margin accounts could be withdrawn by Swiss Re employees.

- ***Interest Paid on Balance in Margin Accounts***

The balance in a Swiss Re employee’s “Mitarbeiter-Option” margin account should not represent a true cost. Therefore, interest would be paid at a competitive rate. To satisfy the above outlined initial margin requirements for the “Mitarbeiter-Option” and its underlying, ACFP, a Swiss Re employee would also be able to deposit RUKN shares at 50% of their market value in lieu of cash.

- ***No Naked Short Option Positions***

Call options could only be written by “Mitarbeiter-Option” market participants if the shares that would have to be delivered against them were already owned. No margin would in such a case be required for these short call option positions. However, the extent to

which the underlying shares could be margined would be reduced by the amount by which the options were in-the-money.

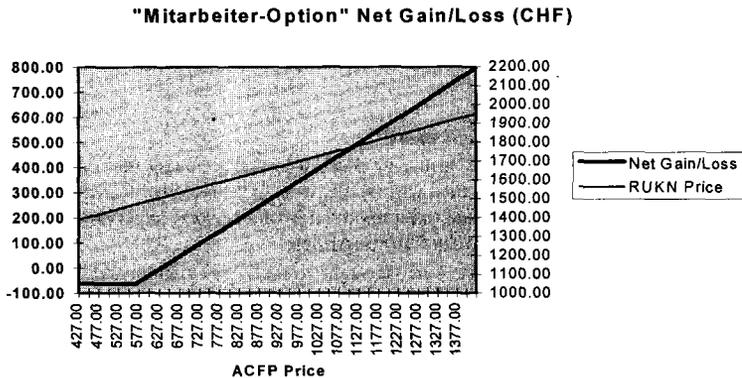
Note that with our “Mitarbeiter-Option” proposal the Swiss Re internal options market would consist of *derivative securities with only low worst case exposures (margin requirements)*:

- “Mitarbeiter-Option”: **CHF 63.00** or 31% of purchase price of CHF 203.00
(break-even at RUKN level of CHF 1506.00)
- Underlying ACFP: **CHF 130.00** or 30% of purchase price of CHF 427.00
(break-even (worst case) at RUKN level of CHF 1643.00)

Margin Accounts / Leverage.

Applying the above outlined Swiss Re internal options market rules, we are now going to show how a long position in one “Mitarbeiter-Option” (i.e., one European call (compound) option with investment protection on a fully protected American call) would perform in the portfolio of a Swiss Re employee:

1. The Initial Waiting Period of 3.5 Years.



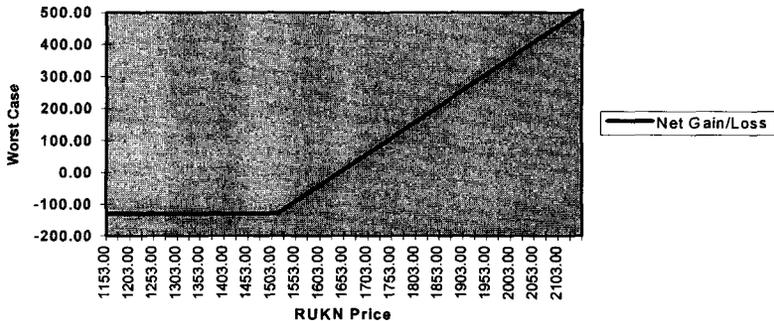
The price of the “Mitarbeiter-Option” is CHF 203.00. Its worst case exposure however (because of the built-in investment protection of CHF 140.00) only CHF 63.00 or 31% of its value. *The Swiss Re employee is therefore required to deposit CHF 63.00 on his/her “Mitarbeiter-Option” margin account.* At maturity of the “Mitarbeiter-Option” in 3.5 years this deposit will have grown to CHF 72.00 (at 4% interest p.a.). At this time the Swiss Re employee will be asked whether he/she would like to buy the underlying fully protected American forward-start call option (ACFP). If this is not the case, then his/her margin account will be settled according to the schedule:

"Mitarbeiter-Option" Settlement (No Purchase of ACFP)				
<i>Margin Account:</i>				
Deposit (CHF)		63.00		
Settlement Date (Years)	3.5			
Interest on Margin (% p a)	4%	9.00		
Balance before Option Settlement (CHF)		72.00		
<i>"Mitarbeiter-Option":</i>				
	Worst Case Scenario	Break-Even Scenari	Purchase Scenario	Good Profit Scenario
ACFP Price (CHF)	427.00	630.00	697.00	1130.00
Exercise Price (CHF)	427.00	427.00	427.00	427.00
Investment Protection (CHF)	140.00	140.00	140.00	140.00
Payoff at Maturity (CHF)	140.00	203.00	270.00	703.00
Payoff at Maturity (CHF)	140.00	203.00	270.00	703.00
Option Price (CHF)	203.00	203.00	203.00	203.00
Gain/Loss (CHF)	-63.00	0.00	67.00	500.00
<i>Margin Account:</i>				
Balance before Option Settlement (CHF)	72.00	72.00	72.00	72.00
"Mitarbeiter-Option" Gain/Loss (CHF)	-63.00	0.00	67.00	500.00
Balance after Option Settlement (CHF)	9.00	72.00	139.00	572.00
Return on Deposit (% p a)				23.1%

Break-even will be achieved at a RUKN price in 3.5 years of CHF 1506.00. The "purchase" scenario (for an explanation, see below) and the "good profit" scenario (any scenario associated with a 3.5 year RUKN price > CHF 1543.00 is a "profit" scenario, see below) correspond to RUKN prices of CHF 1543.00 and CHF 1786.00, respectively. The decision not to buy the underlying ACFP would only make sense if RUKN was thought to have no (further) upside potential. On the other hand it would even make sense to buy ACFP in the above worst case scenario if the Swiss Re employee was strongly convinced of such a significant upside potential of RUKN over the next 1.5 years. **As a general rule however, purchase of the underlying ACFP should only be considered in a scenario at least as good as the "purchase" scenario.**

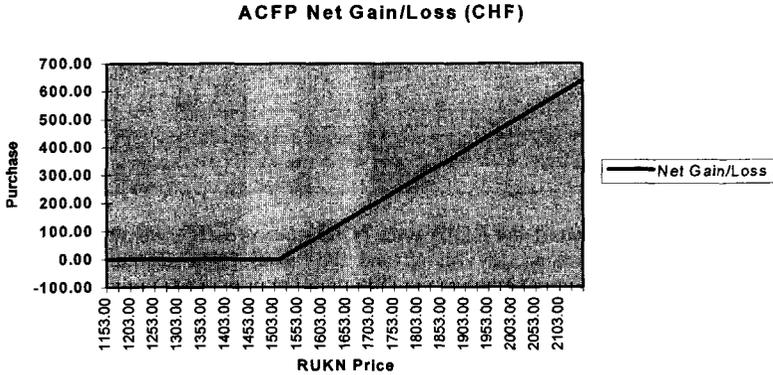
2. The Subsequent 1.5 Years.

ACFP Net Gain/Loss (CHF)

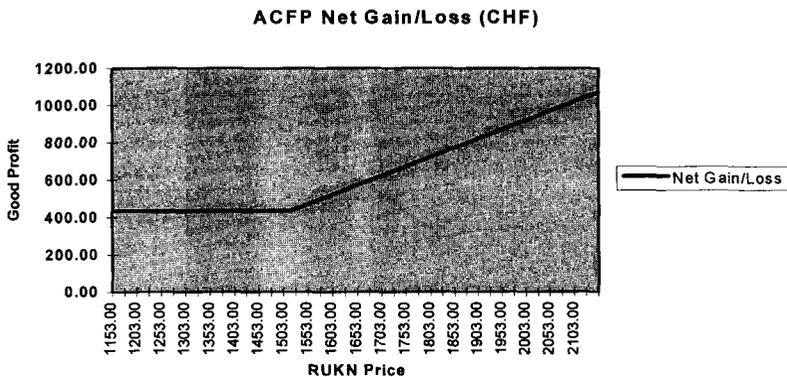


If the Swiss Re employee at maturity of the "Mitarbeiter-Option" decides to purchase the underlying ACFP, then the corresponding purchase price is CHF 427.00. ACFP's worst case

exposure however (because of the built-in “Mitarbeiter-Option” and ACFP investment protections of CHF 140.00 and CHF 360.00, respectively) only CHF 130.00 or 30% of its value. ACFP’s actual exposure and performance over its maturity period of 1.5 years of course depend upon the performance of the “Mitarbeiter-Option” during the initial 3.5 year waiting period: the “purchase” scenario is defined by the “zero exposure” requirement while a “profit” scenario is characterized by a strictly positive payoff function (n.b., the payoff “plateau” ends at RUKN = CHF 1513.00):



Therefore, in a scenario that is at least as good as the “purchase” scenario the total margin requirement for a “Mitarbeiter-Option” compensation package is only CHF 63.00 over its entire 5 year maturity period. This means that no additional margin deposit will be required in 3.5 years.



Upon exercise of the underlying fully protected American forward-start call option (ACFP) in 5 years time (early exercise should only be considered if $RUKN \geq CHF\ 1513.00$ and no

further RUKN upside potential is conceivable) the Swiss Re employee's margin account will be settled according to the scenario-dependent schedules below. With the resulting balance new "Mitarbeiter-Option" compensation/incentive packages or RUKN shares can be purchased. In the case where the Swiss Re employee decides to buy shares, these can be purchased on margin at CHF 577.00 (i.e., an initial margin deposit of 50% of the purchase price of CHF 1153.00 is required). Final cash settlement of the Swiss Re employee's "Mitarbeiter-Option" margin account will be at the time when he/she leaves the firm.

ACFP Settlement (Worst Case Scenario)				
<i>Margin Account:</i>				
"Mitarbeiter-Option" Balance (CHF)			9.00	
Additional Margin (CHF)			121.00	
	initial	new		
Deposit (CHF)	63.00	130.00		
Settlement Date (Years)	5.0			
Interest on Margin (% p a)	4%	8.00		
Balance before ACFP Settlement (CHF)		138.00		
<i>ACFP:</i>				
	Worst Case Scenario	Break-Even Scenario	Good Profit Scenario	
RUKN Price (CHF)	1153.00	1643.00	2043.00	
Exercise Price (CHF)	1153.00	1153.00	1153.00	
Investment Protection (CHF)	360.00	360.00	360.00	
Payoff at Maturity (CHF)	360.00	490.00	890.00	
Payoff at Maturity (CHF)		360.00	490.00	890.00
Option Price (CHF)		490.00	490.00	490.00
Gain/Loss (CHF)		-130.00	0.00	400.00
<i>Margin Account:</i>				
Balance before ACFP Settlement (CHF)		138.00	138.00	138.00
ACFP Gain/Loss (CHF)		-130.00	0.00	400.00
Balance after ACFP Settlement (CHF)				
Return on New Deposit (% p a)				

Note that additional margin (of CHF 121.00) after 3.5 years is only required if the underlying ACFP is purchased in the above worst case scenario (not recommended unless in the case where the Swiss Re employee is strongly convinced that the RUKN upside potential over the next 1.5 years merits such additional expenses). In this scenario it also makes sense to restart the book-keeping of the margin account after 3.5 years (because of the additional margin required). In the other two scenarios below the returns are calculated on the basis of the initial margin of CHF 63.00 and a 5 year book-keeping period.

ACFP Settlement (Purchase Scenario)					
<i>Margin Account:</i>					
"Mitarbeiter-Option" Balance (CHF)					139.00
Additional Margin (CHF)					0.00
	initial	new			
Deposit (CHF)	63.00	130.00			
Settlement Date (Years)		5.0			
Interest on Margin (% p a)		4%		9.00	
Balance before ACFP Settlement (CHF)					148.00
<i>ACFP:</i>					
			Worst Case Scenario	Break-Even Scenario	Good Profit Scenario
RUKN Price (CHF)			1153.00	1643.00	2043.00
Exercise Price (CHF)			1153.00	1153.00	1153.00
Investment Protection (CHF)			360.00	360.00	360.00
Payoff at Maturity (CHF)			360.00	490.00	890.00
Payoff at Maturity (CHF)			360.00	490.00	890.00
Option Price (CHF)			490.00	490.00	490.00
Gain/Loss (CHF)			-130.00	0.00	400.00
<i>Margin Account:</i>					
Balance before ACFP Settlement (CHF)			148.00	148.00	148.00
ACFP Gain/Loss (CHF)			-130.00	0.00	400.00
Balance after ACFP Settlement (CHF)			18.00	148.00	548.00
Return on Initial Deposit (% p a)			-14%	27%	154%

ACFP Settlement (Good Profit Scenario)					
<i>Margin Account:</i>					
"Mitarbeiter-Option" Balance (CHF)					572.00
Additional Margin (CHF)					0.00
	initial	new			
Deposit (CHF)	63.00	130.00			
Settlement Date (Years)		5.0			
Interest on Margin (% p a)		4%		35.00	
Balance before ACFP Settlement (CHF)					607.00
<i>ACFP:</i>					
			Worst Case Scenario	Break-Even Scenario	Good Profit Scenario
RUKN Price (CHF)			1153.00	1643.00	2043.00
Exercise Price (CHF)			1153.00	1153.00	1153.00
Investment Protection (CHF)			360.00	360.00	360.00
Payoff at Maturity (CHF)			360.00	490.00	890.00
Payoff at Maturity (CHF)			360.00	490.00	890.00
Option Price (CHF)			490.00	490.00	490.00
Gain/Loss (CHF)			-130.00	0.00	400.00
<i>Margin Account:</i>					
Balance before ACFP Settlement (CHF)			607.00	607.00	607.00
ACFP Gain/Loss (CHF)			-130.00	0.00	400.00
Balance after ACFP Settlement (CHF)			477.00	607.00	1007.00
Return on Initial Deposit (% p a)			131%	173%	300%

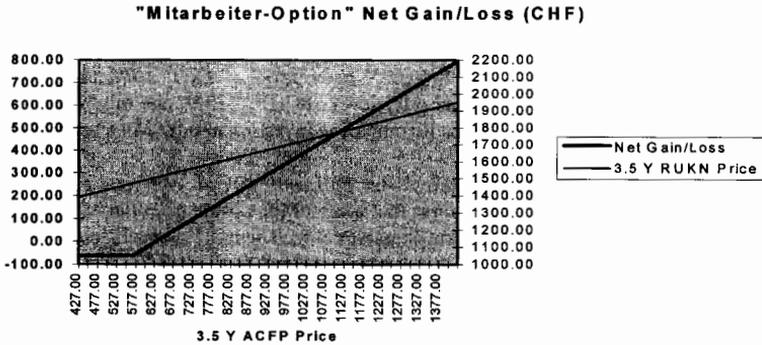
Final Remarks.

Our proposal for a Swiss Re internal "Mitarbeiter-Option" market very closely follows established and approved market practice as it has evolved over time in the major stock

option markets that are accessible to private investors. We suggest a compound “Mitarbeiter-Option” structure with the following key characteristics:

1. The Initial Waiting Period of 3.5 Years.

A. Payoff-Diagram.

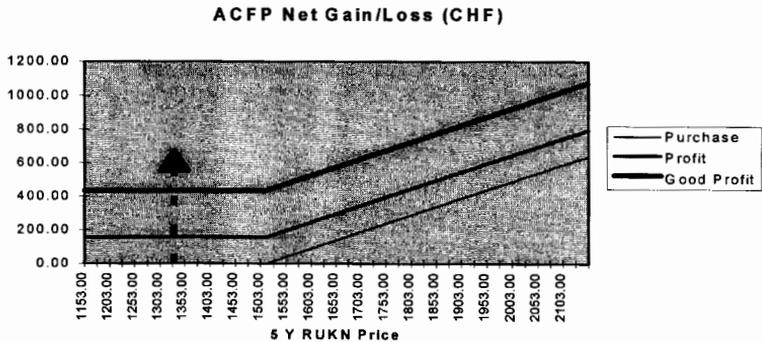


B. Price, Protection, Exposure, Required Investment, Break-Even.

Price: CHF 203.00
 Protection: CHF 140.00
 Exposure: CHF 63.00
Required Investment (Initial Margin): CHF 63.00
Break-Even (RUKN): CHF 1506.00

2. The Subsequent 1.5 Years.

A. Payoff-Diagram.



B. Price, Protection, Exposure, Additional Margin, Break-Even.

Price: CHF 427.00

Protection: CHF 360.00

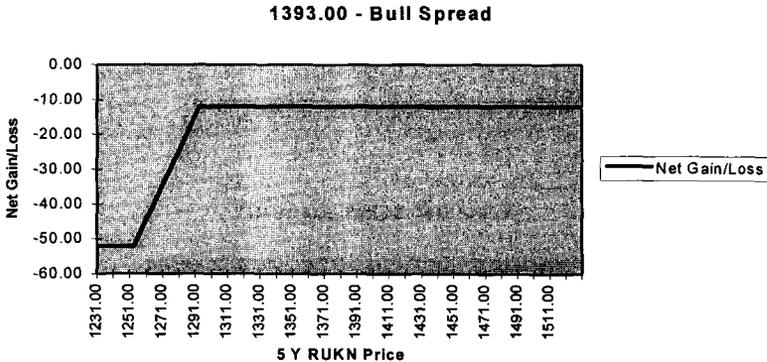
Exposure: CHF 130.00

Additional (Maintenance) Margin: CHF 0.00**Break-Even (Worst Case): CHF 1643.00**

This “Mitarbeiter-Option” structure is a *simple alternative to the standard structure, costs CHF 63.00²⁰*, requires *no further investment during its entire maturity period of 5 years* and has its *break-even at a 3.5 Y RUKN price level of CHF 1506.00*. After a payoff “plateau” that ends at the 5 Y RUKN price level of CHF 1513.00 the full 5 Y RUKN upside potential can be exploited by a Swiss Re employee investing in this “Mitarbeiter-Option”.

Even cheaper “Mitarbeiter-Options” of the *bull call spread* type can be designed. The drawback of such structures is of course that some of the upside potential of RUKN has to be given up. We just briefly outline some examples here. The basic recipe is to buy a RUKN call option with a low exercise price (in the examples below, CHF 1253.00, which is the exercise price of the original “Mitarbeiter-Option” proposal) and to sell a RUKN call option with a higher exercise price (in the examples below, CHF 1393.00, CHF 1363.00, CHF 1333.00, CHF 1303.00 and CHF 1283.00, respectively) and the same maturity period (in the examples below, 5 years):

1. Price = CHF 52.00²¹.

A. Payoff-Diagram.

²⁰ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

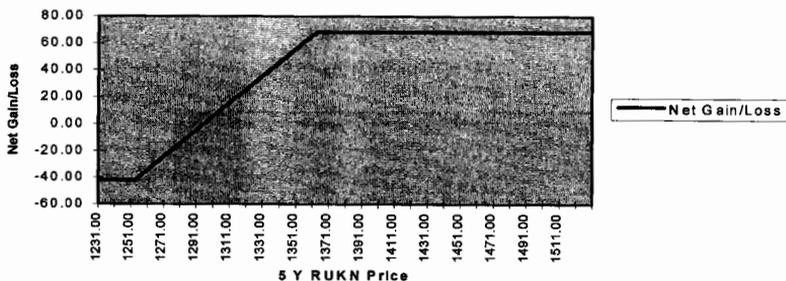
²¹ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

B. Remarks.

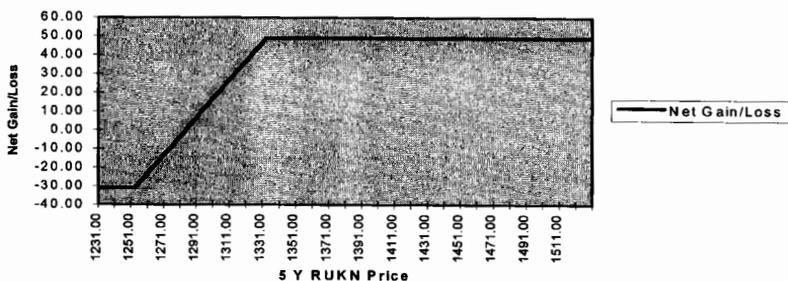
The above (1253.00, 1393.00) - bull call spread costs CHF 52.00. By moving the lower exercise price of the spread upwards, the following spreads can be purchased for roughly the same amount of money:

Equivalent Bull Call Spreads			Spread Price (CHF)
Lower Strike (CHF)	Higher Strike (CHF)		
1253.00	1393.00		52.00
1353.00	1523.00		53.00
1453.00	1653.00		52.00
1553.00	1803.00		53.00
1653.00	1953.00		52.00

2. Price = CHF 42.00²².

1363.00 - Bull Spread

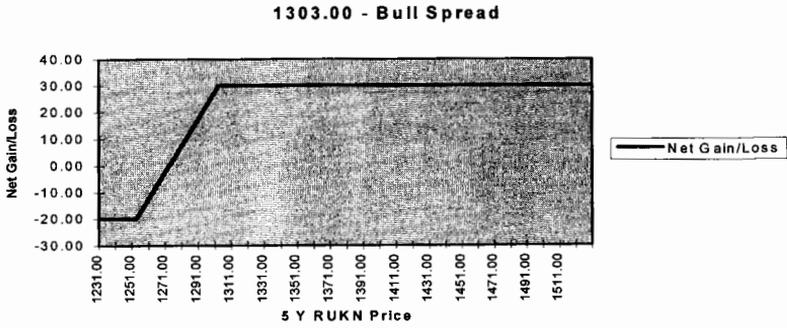
3. Price = CHF 31.00²³.

1333.00 - Bull Spread

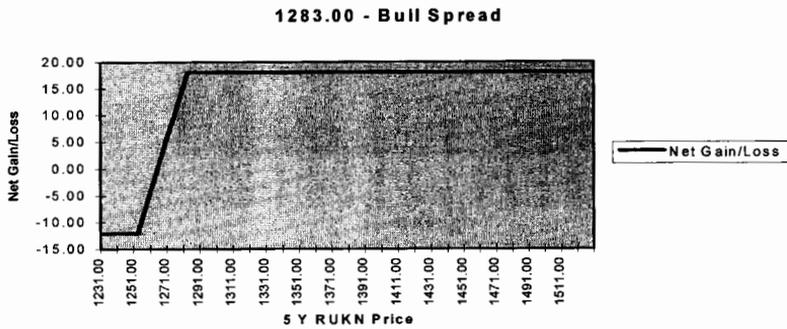
²² Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

²³ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

4. Price = CHF 20.00²⁴.



5. Price = CHF 12.00²⁵.



²⁴ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.

²⁵ Market parameters: volatility = 20%, dividend yield = 2%, interest rate = 4%.